Table 7-8
Ecological Upper Threshold Values
Based on High Toxicity Reference Value and Hazard Quotient of 1
Non-Tidal Wetland Area - Sediment
Investigation Area H1
Mare Island, Vallejo, California

	Salt Marsh Harvest Mouse			Mallard			Mare Island Ambient Fill		Cleanup Levels	
COEC[1]	Low TRV (mg/kg)	High TRV (mg/kg)	Killdeer[2] (mg/kg)	Breeding[2] (mg/kg)	Non-Breeding[2] (mg/kg)	Great Blue Heron[2] (mg/kg)	95th Percentile (mg/kg)	Maximum Detected (mg/kg)	Average Threshold[3] (mg/kg)	Upper Threshold[4] (mg/kg)
Inorganics										
Antimony	0.06	26	--	--	--	--	8.5	16.5	8.5	26
Arsenic	6	88	277	2,730	15,141	12,143	36	49	36	88
Barium	292	372	116	905	38,107	9,486	--	--	290a	370a
Cadmium	0	12	123	488	743	5,740	5	6	5	12
Chromium	327	3,145	18	158	8,600	300	140	148	140	148b
Copper	42	10,036	289	2,438	59,428	4,631	120	148	120	290
Lead	32	7,635	177	3,062	22,051	471	59	60	59	180
Manganese	25	293	663	4,800	151,748	248,316	1,600	13,559	1,600	1600b
Mercury	34	545	1	8	557	8	2	70	2	2
Nickel	3	749	484	4,636	122,568	31,075	130	148	130	480
Selenium	7	165	24	719	2,877	3	NA	NA	3	3
Tin	12	18	439	1,023	1,087	9,328	NA	NA	--b	--c
Vanadium	29	286	2,545	47,952	211,430	62,922	190	220	190	290
Zinc	78	3,354	476	3,694	149,219	3,195	230	290	230	480

Notes:

1 - Chemicals listed in this table were identified presenting a risk to ecological receptors at concentrations below ambient/background concentrations.

2 - The hot spot level is based on the high TRV, HQ=1. Note Chrome numbers based on an unpublished study.

3 - Average hot spot threshold is the greater of ambient fill and the lowest of the ecological preliminary remediation goals based on the low TRV for the salt marsh harvest mouse and the high TRV for other wetland ecological receptors.

4 - The upper hot spot threshold is the lowest of the ecological risk-based concentrations (RBCs) based on the high TRV, HQ=1. All values presented as two significant digits.

[a] Due to the high level of uncertainty associated with the avian TRV for barium, the avian RBCs were not used in selecting the hotspot thresholds.

[b] Upper threshold value was selected based on a resource trustee evaluation of data. Areas 150 feet away from other excavation or upland areas are excluded from hotspots for removal. See discussion in section 8.2.3.2.2.

[c] Threshold values are not presented for tin due to the uncertainty associated with the TRVs for this metal, which were based on the organotin, tributyltin oxide (TBTO). Organotins are more toxic than inorganic tins. Organotins have not been detected in non-tidal wetland sediment.

-- = No TRV available for this chemical

COEC = chemical of ecological concern

HQ = hazard quotient

NA = Not available

PRGs = Preliminary Remediation Goals

TRV = toxicity reference value

mg/kg = milligram per kilogram